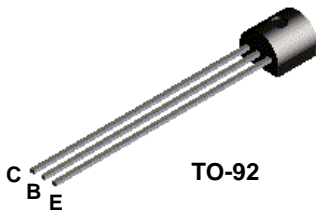
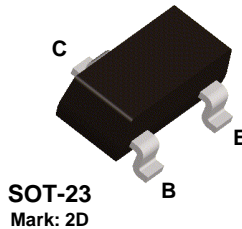


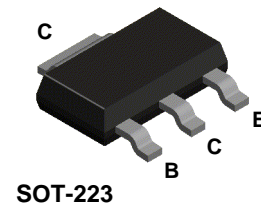
## MPSA92



## MMBTA92



## PZTA92



## PNP High Voltage Amplifier

This device is designed for high voltage driver applications.  
Sourced from Process 76.

### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	300	V
V <sub>CBO</sub>	Collector-Base Voltage	300	V
V <sub>EBO</sub>	Emitter-Base Voltage	5.0	V
I <sub>C</sub>	Collector Current - Continuous	100	mA
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max			Units
		MPSA92	*MMBTA92	**PZTA92	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	625	350	1,000	mW
		5.0	2.8	8.0	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3			°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	200	357	125	°C/W

\* Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

\*\* Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.

# PNP High Voltage Amplifier

(continued)

## Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
<b>OFF CHARACTERISTICS</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 1.0 \text{ mA}, I_B = 0$	300		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \text{ } \mu\text{A}, I_E = 0$	300		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \text{ } \mu\text{A}, I_C = 0$	5.0		V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 200 \text{ V}, I_E = 0$		0.25	$\mu\text{A}$
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 3.0 \text{ V}, I_C = 0$		0.1	$\mu\text{A}$

## ON CHARACTERISTICS\*

$h_{FE}$	DC Current Gain	$I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 30 \text{ mA}, V_{CE} = 10 \text{ V}$	25 40 25		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 20 \text{ mA}, I_B = 2.0 \text{ mA}$		0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 20 \text{ mA}, I_B = 2.0 \text{ mA}$		0.9	V

## SMALL SIGNAL CHARACTERISTICS

$f_T$	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}, V_{CE} = 20 \text{ V},$ $f = 100 \text{ MHz}$	50		MHz
$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 20 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$		6.0	pF

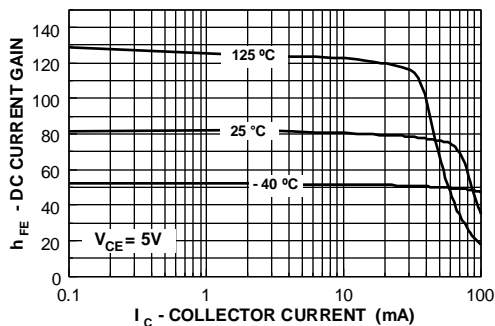
\*Pulse Test: Pulse Width  $\leq 300 \text{ } \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## Spice Model

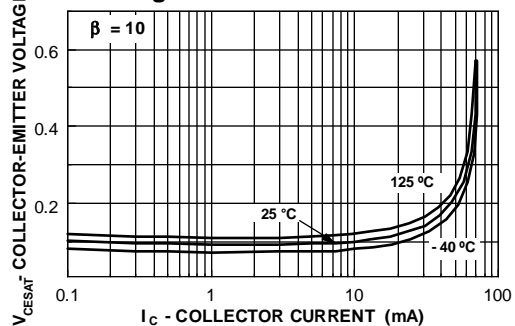
PNP (Is=218.9f Xti=3 Eg=1.11 Vaf=100 Bf=99 Ne=1.307 Ise=218.9f Ikf=.2016 Xtb=1.5 Br=24.67 Nc=2 Isc=0 Ikr=0 Rc=7 Cjc=19.88p Mjc=.4876 Vjc=.75 Fc=.5 Cje=81.49p Mje=.3493 Vje=.75 Tr=516.9p Tf=1.395n Itf=1.5 Vtf=22 Xtf=270 Rb=10)

## Typical Characteristics

DC Current Gain vs Collector Current



Collector-Emitter Saturation Voltage vs Collector Current



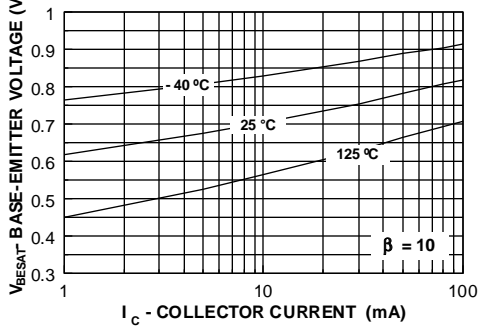
# PNP High Voltage Amplifier

(continued)

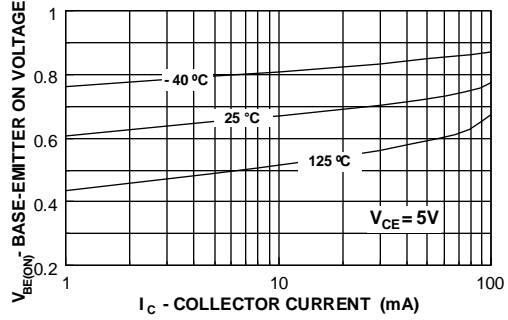
MPSA92 / NMBTA92 / PZTA92

## Typical Characteristics (continued)

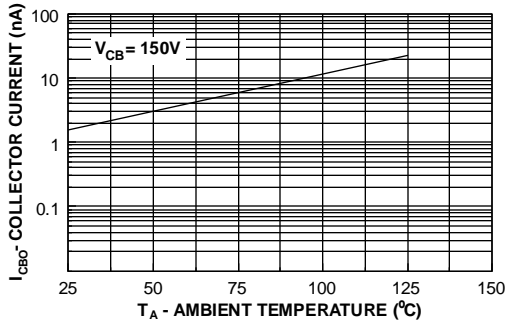
**Base-Emitter Saturation Voltage vs Collector Current**



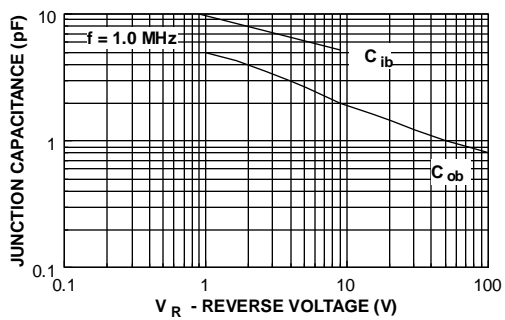
**Base-Emitter ON Voltage vs Collector Current**



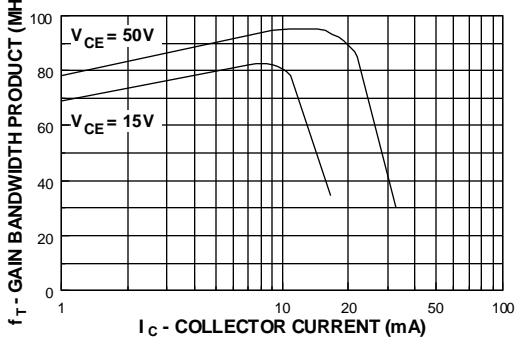
**Collector-Cutoff Current vs Ambient Temperature**



**Junction Capacitance vs Reverse Bias Voltage**



**Gain Bandwidth Product vs Collector Current**



**Power Dissipation vs Ambient Temperature**

